Space Weather Forecast

Issued on Sunday, 07 August 2022 at 13:09 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: G1/Minor Storm intervals likely, mainly Day 2 (08 Aug).

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Very Low over the past 24 hours with no significant flares. There are currently seven sunspot regions on the disc, including three regions approaching the southwest limb, two small unipolar regions in the southeast quadrant, and two further regions which have recently rotated onto the northeast limb. All of these are small and simple with no significant magnetic complexity. No Earth-directed Coronal Mass Ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: The solar wind has shown a transition into a weak coronal hole fast wind. Wind speeds were at background levels below 350 km/s, but started to rise from 07/0000 UTC and are now varying between 400-450 km/s. The total interplanetary magnetic field started weak but rose steadily to become moderate. The north-south component was mostly northward oriented, but gradually became moderately southward directed after 07/0045 UTC. Geomagnetic activity was Quiet to Unsettled (Kp 0-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Low or very low solar activity is forecast with only a slight chance of a Moderate-class flare.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Wind speeds are currently slightly elevated, likely due to a weak fast wind from a coronal hole. The most notable feature is a large central disc coronal hole. Expected fast wind arrival is most likely on Day 2 (08 Aug), but possibly on Day 3 (09 Aug). Wind speeds are likely to reach around 550-600 km/s. Geomagnetic activity will initially be Quiet to Unsettled with Active spells possible, with a slight chance of isolated G1/Minor Storm intervals on Day 1 due to the current weak fast wind. Activity rising to Unsettled to Active with G1/Minor Storm intervals likely when the faster winds arrive, likely Day 2. Easing to Quiet to Unsettled by Day 4 (10 Aug).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background levels with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	60	30	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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